

## SHORT REPORTS

## The situation with moose in Latvia

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A quantitative and qualitative evaluation of the moose (*Alces alces*) population in Latvia over the past three decades is presented, including some suggestions for population management in the future.

**Key words:** moose, population dynamics, food resources, game management.

The given review of the situation with moose in Latvia is based on research and statistical data, collected between 1963-1964 and 1973-1997, by using various methods: recording of the occurrence and frequency of the heaps of faeces dropped by the animal in winter and the data of the kill over the hunting season, covering about 80% of the Latvia's land area.

In accordance with a science-backed population count of 1975, the number of moose in Latvia was below 45,000 or 22 heads per 1,000 ha of forest. The population count of 1992 showed this figure to be 5.1 heads per 1,000 ha. When analysing the population survey data of earlier periods, it is believed that the actual population density must have been considerably below the official data. So, it may be presumed that in the spring of 1996 the official figure of 6,600 heads did not reflect the actual situation. It is proved by the fact that the hunting quotas for the last 5 years have been violated as it follows from the data on the number of licences sold and the sanctions imposed for illegal hunting.

A rapid decrease in the number of moose is also observed on the hunting areas (10,000 ha) managed by the Latvian Forestry Research Institute "Silava" (LFRI SILAVA): 10 heads per 1,000 ha in 1976 as compared to 0.5 to 1 head in 1993-1996. The population decrease is due to intensive hunting over a total area of 300,000 ha and an increase in the wolf population (Table 2). Besides, decision-makers in game management believed moose to be undesirable in the areas inhabited by red deer (*Cervus elaphus*) and, consequently, favoured hunting down the former. However, the research conducted at the Gauja National Park (NP GAUJA) contradicts this opinion (Skriba, 1994, Gaross, 1981): within the

limits of certain population density the deer and moose can cohabit, especially on an area of mixed forest. Similar experience has also been gained by the forestry farms of Saldus, Liepāja and Kuldīga.

On the hunting areas supervised by the LFRI SILAVA the intensity of hunting moose has always been low, while on larger areas the intensive hunting and the presence of wolf has resulted in a decrease of the moose population. The population stabilization cannot be achieved on a relatively small area (5 to 10 thsd. ha), it can be done on an area at least from 50 to 80 thousand hectares.

If we take the total area of forestry farms as 100%, then in 1989 the population density for 18% of it was from 0 to 3 heads per 1,000 ha of forest area. In 1992 the same population density, 0 to 3 heads per 100 ha, refers to 50% of the area under forest farms, and today – to 80% or even more. So, the overall area taken up by moose considerably tends to decrease. A few migrating animals cannot be considered as a population belonging to the given locality.

In the period between 1935 and 1937 (Kalniņš, 1943) and 1963 (Gaross, 1963) the sex ratio for moose was  $\bar{\lambda}:+ = 1:1.5$  to  $1:1.7$ . It refers to the period when moose was not hunted. The same data were obtained in 1973:  $\bar{\lambda}:+ = 1:1.3$ , in 1992:  $\bar{\lambda}:+ = 1:1$ , for calves –  $\bar{\lambda}:+ = 1:0.8 \pm 0.1$  (Gaross, 1991). Today, the population density of moose in a considerable part of Latvia is so low that the estimates of sex, age and current reproduction rate are only accidental.

A moose cow having two calves is a rare case nowadays. In 1963, in November-December, 15% of cows were observed to have two calves, in 1976 – only 4%

(Gaross, 1982). Currently, due to predators, only a small number of calves survive till the next spring. Thus, at present, the reproduction rate of moose is estimated to be within the range of 10 to 12%. At least today it is 3 times less than in 1963 and 2 times less than in the period between 1978 and 1989 (Gaross, 1982, 1991).

The official figures for the kill in legal hunting are given in Table 1. Moreover, we can affirm that until 1989 poaching had virtually no effect on the moose population, as the situation was under a strict control.

In the report presented to the International Symposium on Moose (Siktivkar, Komi Republic, Russia, 1991) the author of this article informed of the research data confirming an urgent need to curb the population loss of moose and introduce more reliable methods of population count. Unfortunately, a deaf ear has been turned to these proposals and no changes in hunting practices made (see Table 1).

**Table 1.** The kill for moose and wolf in Latvia

Hunting season (year)	Moose			Wolf	
	Population estimate, in heads	Kill		Population estimate, in heads	Kill
		heads	% of quota		
1990/91	13 260	6 980	105	273	143
1991/92	12 851	5 941	96	401	126
1992/93	11 056	4 458	82	537	208
1993/94	10 885	3 137	72	685	263
1994/95	8 684	1 675	62	812	230
1995/96	7 212	1 262	77	926	321
1996/97	6 646	889	80	934	391

In 1996 the hunting quota for moose was 1,112 heads (the actual kill in the previous year was 1,162 or 77% of the quota). Regrettably, since 1990 poaching of *Cervidae* has become mass-scale. This has actually resulted in a collapse of the moose population in Latvia, both quantitatively and qualitatively, predominantly due to hunting pressure, legal and illegal, and a low rate of survival of calves, especially aged from 1 to 3 years, which fall a prey to wolves (Table 2).

Thus, the situation where the population growth is below the population drain has been going on for a number of years. Today the authorities setting the hunting quotas possess no adequate information on the status of the moose population and its quality. Already for a number of years the hunting quotas have been decided on with no objective data support. One of the reasons for it is the lack of objective, science-backed methods of population count.

**Table 2.** The dynamics of the number of wolf and moose in number of heads per 1000 ha of forest and rated on a percent basis.

Season (1.04-30.03)	Wolf		Moose		Number of moose found killed by predators
	heads	%	heads	%	
1973/74	0,3	100	10	100	2
1974/75	0,3	100	7	70	2
1975/76	0,3	100	8	80	1
1976/77	0,3	100	10	100	2
1977/78	0,4	150	6	60	1
1978/79	0,7	250	5	50	-
1979/80	0,7	250	6	60	2
1980/81	0,9	300	7	70	1
1981/82	0,9	300	9	90	-
1982/83	0,9	300	4	40	3
1983/84	0,4	150	6	60	-
1984/85	0,7	250	3	30	1
1985/86	1,1	400	4	40	-
1986/87	1,1	400	2	20	1
1987/88	1,6	530	3	30	-
1988/89	1,6	530	1	10	-
1989/90	1,5	530	1	10	-
1990/91	1,6	530	1	10	-
1991/92	1,6	530	1	10	-
1992/93	1,0	400	1	10	-
1993/94	1,0	400	0,5	5	-
1994/95	1,4	470	0,5	5	-
1995/96	1,8	600	0,4	4	-

On the other hand, Latvia abounds in food resources for *Cervidae*. With no negative impact on the environment Latvia could sustain the following population density: moose – from 40 to 50 heads per 1,000 ha of forest, red deer – 100 heads, roe deer (*Capreolus capreolus*) – 300 heads respectively. Some decades ago there were places in Latvia with similar population indices for *Cervidae* (Gaross, 1984, 1985-1991).

In the late 1960s a need to reduce the moose population (35 to 45 thsd. heads) was well grounded, however, it cannot continue until the last moose is hunted down (Gaross, 1982, 1991). To avoid similar developments, actions aimed at increasing the moose population become a must. Here, an objective evaluation of the current situation with the moose population is something to start with. We have proposed reliable population estimation methods for moose: counting of heads during the hunting season and recording of the occurrence and frequency of the heaps of faeces in winter.

Among the measures to boost up the moose in Latvia we propose a ban on hunting cows for at least a 3-year period, while the hunting quotas for bulls should be based on well-grounded and reliable population data. The population drain (legal hunting, predators) should be kept

within the limits of 50% of the birth rate. Legislative measures must be adopted to efficiently restrict poaching and create incentives for hunting down wolves.

The above-mentioned equally refers to other game animals of Latvia as wild boar, roe deer, etc., as the reasons for population decrease are nearly the same.

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